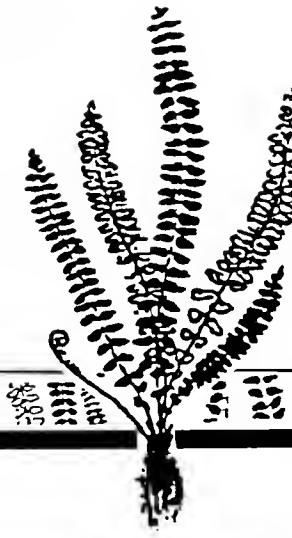


Hardy Fern Foundation NEWSLETTER

Editor Sue Olsen ■ VOLUME 7 NUMBER 4 ■ FALL 1997



President's Message

Anne Holt and Jocelyn Horder

The fall rains discouraged potential buyers at the Northwest Horticultural Society's fall sale, but not the sale of ferns at the Rhododendron Species Botanical Garden sale the preceding weekend. The HFF profit was approximately \$800.00 and we profit as well by educating the public about the vast assortment of ferns suitable for garden use. We again thank Sue and Herman Entz for their time and effort in co-ordinating our sales booth.

Ferns are being distributed as well. After our September board meeting volunteers packed and shipped 124 ferns to members and 423 to our Satellite Gardens. Your board members also conducted an evaluation of the ferns planted in the Rhododendron Species Botanical Garden. We are happy to report that they are thriving. A full report will be published along with satellite reports next spring. Remember that your HFF membership entitles you to one free admission to the RSBG annually so be sure to stop and see your collection when you are in the area. We would like to encourage our members to evaluate their own gardens as well and send this information to our editor. We will begin publishing these reports with this issue. Thank you.

We were pleased to donate \$500.00 to Steve Hootman for his collecting trip to China and \$150.00 to Dan Hinkley for his collecting trip to Korea and Japan. We look forward to having new and different fern spores to grow when they return.

Plans are under way for the Northwest Flower Show where the HFF will again share display space with the Rhododendron Species Foundation. Board member Glen Youell has agreed to co-ordinate our efforts. She needs volunteers to help staff the booth. The show runs from Feb. 4 - 8. To volunteer call Mrs. Youell at 425 885-6387 or drop her a note at 3459 122nd Pl. N.E., Bellevue, WA 98005. In addition to helping the HFF, volunteers also receive free admission to this fantastic show.

We are in the process of compiling an e-mail directory of our membership. To be listed please send your e-mail address to Hffmembership@juno.com.

Because of the heavy rains here the slugs and snails are thriving. Do keep baiting for these hungry creatures. A spritz with a mixture of one part non sudsy ammonia to four parts water also does the trick.

Thanks

Your HFF board would like to thank the following members who have contributed above and beyond the basic membership dues.

Supporting:

Mrs. Charles Hyde

Contributing:

Kathleen Dennis

Mrs. Phil Duryee

Jocelyn Horder

the following members who have contributed above and

Charles Lamade

Marshall Majors

Sue and Harry Olsen

Meredith Smith M.D.

Chris Spindel

Glen Youell

Endowment Fund:

Nancy Ballard

Frank Damgaard

Susan Eichhorn

Irving Knobloch

Martha Robbins

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Welcome New Members

Joe and Judy Caughlin

C. Layng

Lisa K. Ravenholt

Mrs. Wendy Hirschman

Susan M. Callan

John Henry Co.

Blanchard Reel

Linda Shaw

Joyce Wiechmann

Virginia Lusk

Exploring Private European Fern Gardens Summer 1997 - A Series

Sue Olsen, Bellevue, WA

A VISIT WITH PhDr. ZDENEK SEIBERT in TACHOV, CZECH REPUBLIC SEPT. 1997

Fern lovers who have grown ferns from spores contributed to various spore exchanges or for that matter alpine garden enthusiasts who have dipped into rock garden society seed exchanges will immediately recognize the name of frequent donor PhDr. Zdenek Seibert. This charismatic 86 year old gentleman has been donating spores and seeds to assorted exchanges for as long as I can remember. Much of his material would be new to cultivation at the time and American fern enthusiasts can thank PhDr. Seibert for such wonderful introductions as *Polystichum neolobatum*, *Dryopteris namegatae*, *Dryopteris bissetiana* and a long list of *Aspleniums* to name just a few. I've been corresponding with PhDr. Seibert for many years and have been delighted to be on the receiving end of his generosity with fern spores. I have always wanted to meet my distant penpal PhDr. Seibert and my husband and I decided that late summer 1997 would be an ideal time to visit the Czech Republic and PhDr. Seibert's garden in the city of Tachov. It was an exciting prospect for us all and turned out to be one of the highlights of our trip.

PhDr. Seibert who immediately asked to be addressed by his Christian name, Zdenek, gardens on a hillside overlooking the city. His life has spanned two world wars as well as 40 years of Communist rule all of which determined the course of his career but did not deter PhDr. Seibert's love of plants. The extent of his collection was immediately apparent upon entering the garden and I was overwhelmed especially as we were introduced to the many *Asplenium* species, and assorted subspecies and hybrids, particularly those of *A. trichomanes*. It was a tremendous learning experience and I hope that we can sort this information out in future newsletters. Part of his collection is a reflection on his long time association with the late Dr. Tadeus Reichstein, a Swiss Nobel Prize Recipient in physics, who in his later years devoted much of his time to the study of pteridology especially the

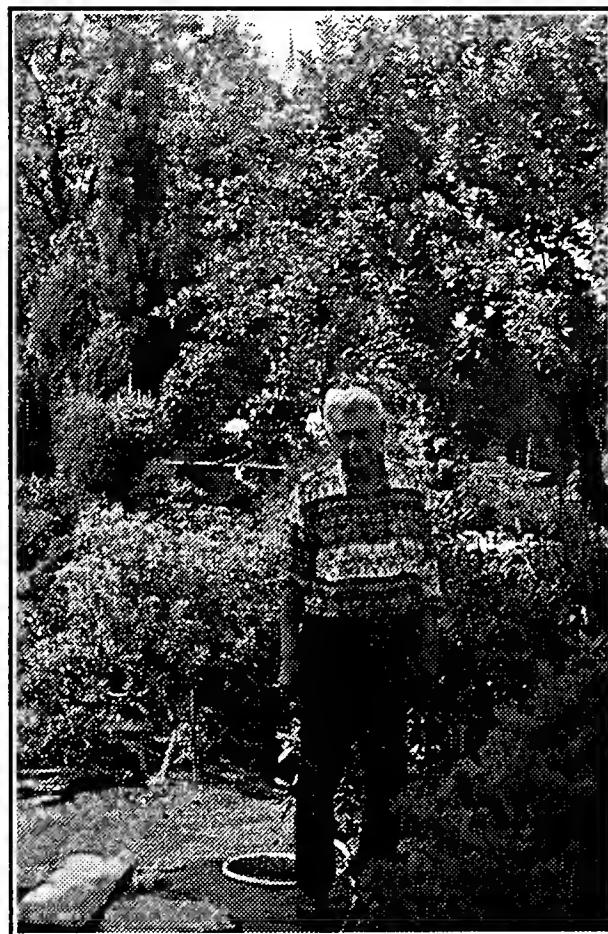
Aspleniums. Another colleague, Stefan Jessen of Chemnitz, Germany also is doing continuing research on the *Aspleniums*. Mr. Jessen has traveled and collected extensively in eastern Europe and Russia. He has shared much of this rare material with PhDr. Seibert so his collection is comprehensive indeed.

Almost all of the approximately 1/3 acre garden is covered with plants many in pots. In addition to ferns and alpines PhDr. Seibert has large collections of rhododendrons, daphnes and conifers. There are also a number of structures for propagating. He sows his fern spores in a heated greenhouse. With the exception of the green spores (*Osmunda*'s etc.), he sows in the fall or winter so that he can control the temperature. (Their summers are hot.) The temperature is maintained at 70°. As the young sporophytes develop they are hardened off and moved into another section of the greenhouse where the temperature never dips below 40°. Eventually they go into a lath house, a shade house, the garden and in many instances, the gardens of fellow fern lovers.

PhDr. Seibert is ably assisted by another fern enthusiast, Stanislava (Tanya) Hoskova. It was a pleasure to have her join us for our tour. Our lovely visit came to an end with Tanya serving us refreshments in the garden. By now two visiting German alpine enthusiasts had joined us. (They were as enthralled with PhDr. Seibert's alpines as we were with the ferns.) We were surrounded by a panoramic city view, beautiful plants and best of all good company.



Ferns in PhDr. Seibert's lath house. Photo by Harry Olsen.



PhDr. Seibert.
Photo by Harry Olsen.

A Reminder

Dr. Alan Smith of the University of California Berkeley will conduct a **two day workshop, January 10 & 11 on the Polypodiaceae**.

The class is limited to 20 participants on a first-come first-served basis. The charge is \$165. for non-members of the Friends of the Jepson Herbarium and \$150. for members. Registration should be sent to Friends of the Jepson Herbarium, 1001 Valley Life Sciences Building #2465, University of California, Berkeley, CA 94720-2465. For more complete information see the announcement in the summer 1997 newsletter.

PhDr. Zdenek Seibert's Biography

PhDr. Seibert writes:

"Dear Mrs. Olsen,

I feel very pleased, honoured and flattered by your asking me for a biography of my life.....If you insist on your wish to have my biography I enclose for this case some words about my life."

I was born on May 13, 1911 at Vizovice - a small Moravian town. I started my career as a teacher and after passing due exams I worked as a German teacher. When the second world war was over and the universities were open again, I studied philosophy and psychology at the Charles University in Prague and took the degree Doctor of Philosophy. As I wasn't allowed to teach or give lectures, I found my occupation in an organization of employees in the education system.

My interest in ferns arose step by step probably 50 years ago. I liked ferns such as Woodsias and Ceterach which were at that time very wanted and difficult to obtain in our country. A suggestion to try to raise ferns from spores led me to the book "Einzug der Gräser und Farne in die Gärten" (Entry of the Grasses and Ferns to the Gardens), written by Karl Foerster, Neumann Verlag, Radebeul 1, 1957. I put a little sterilized turf in a preserving jar, sowed spores of Ceterach officinarum and gave the closed jar a spot on a window ledge. After some days I wasn't able to believe my eyes. The surface was covered with green. By means of a magnifying glass I found out that the spores had germinated and developed to prothalli. After having moved from Prague to Tachov, I used different and rather all kinds of procedures and methods and raised ferns from spores in a heated greenhouse.

Raising ferns from spores is often an adventure. You sow one species and get many different species. Then it is a challenge to solve what kinds of ferns you have. It is often a difficult task which needs much patience and consulting with the literature. A fern journal is a great help.

Call for Papers

Dear Fellow Pteridologists,

As some of you know, I've been asked to organize a symposium on the Conservation Biology of Pteridophytes for the joint annual meeting of the American Fern Society and the Botanical Society of America, August 1998, in Baltimore, Maryland. I'm just now starting to put some thought into potential speakers and would greatly appreciate any thoughts you might have. Ideally, I would like to see a combination of topics including basic and applied research of rare and endangered pteridophytes, ecology, genetics, demography, systematics, habitat restoration etc. So, if you and/or any of your students are working on projects relating to conservation of pteridophytes, please let me know as soon as possible so that I can consider as much as possible in putting together a program. At this point I am NOT aware of the availability of any funds to help with travel expenses, but I will be checking into that.

Looking forward to hearing from you!

Tom Ranker

Curator of Botany & Associate Professor
University of Colorado Museum &
Department of EPO Biology
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Boulder, CO 80309-0350
Phone 303-492-5074
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e-mail ranker@stripe.colorado.edu

Readers & Writers Alert

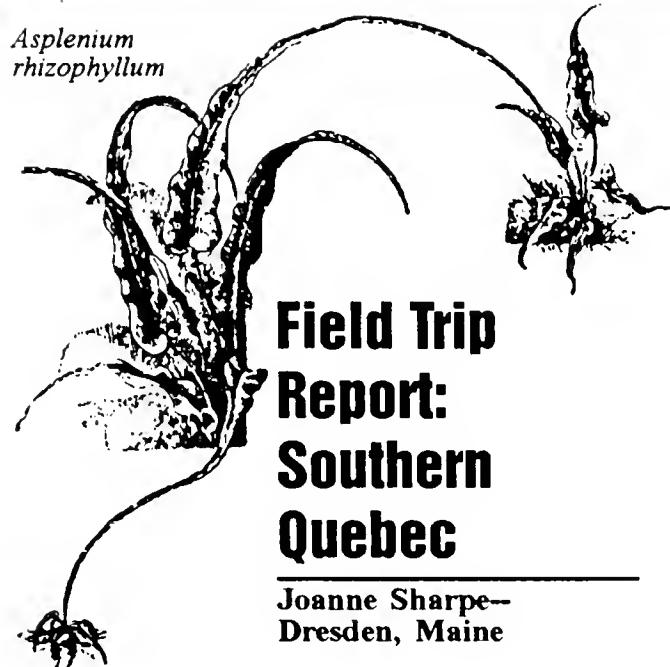
Your editor is always happy to receive articles and comments and I thank the many members who have contributed to our newsletter. Right now I'm looking for some very specific articles on two different subjects:

Propagation - how do you grow your ferns from spores? There are almost as many methods as there are propagators and I'd like to hear about yours.

Deer - are they a problem for you? Do you find some ferns more susceptible than others? Who are the good guys?

Thanks!

You may mail articles to me (preferably on a PC disk in Word 6) at 2003 128th Ave. S.E., Bellevue, WA 98005 or send them by e-mail to Foliageg@juno.com.



Field Trip Report: Southern Quebec

Joanne Sharpe
Dresden, Maine

Two days of fern field trips in Canada's province of Quebec near Montreal left this participant totally impressed with the pteridological resources and puzzles of the area. The forays were sponsored by the American Fern Society and were held August 2-3, 1997 in association with the meetings of the American Institute of Biological Sciences (AIBS) at the Palais de Congres de Montreal.

We congregated in downtown Montreal on Saturday morning to board our bus with co-leaders Charles Mercier and Jacques Labrecque and were soon off to Mont St-Hilaire which is just west of Montreal. On the bus we were provided with a comprehensive description of Mont St-Hilaire which is a 1200-hectare property owned since 1958 by McGill University. There is a visitor center and facilities for researchers and because of its unique habitats and intact ecosystems, it has been designated a UNESCO Man & Biosphere Reserve. In managing the reserve, McGill has tried to balance visitor and researcher demands within a natural site so close to Montreal that suburban development has been gradually eliminating the buffers provided by more rural uses in the past.

Included within the Mont-Hilaire reserve is the dome-shaped mountain itself, flanked with various types of glacial deposits and small Lac Hertel--which has been divided down the middle into fishing and research uses. In this one 1200-hectare area it is possible to see over 50 species of ferns and fern allies, however because of time limitations our visit was limited to the area around the lake. By my count we saw at least 30 different species in this one area. Our leader for this part of the trip, Charles

Mercier, though a Carex researcher at Mont-Hilaire, had proven himself a pteridologist as well, finding localities for some of Quebec's rare ferns near his research sites. Along the lake edge we saw both the broad beech fern Phegopteris hexagonoptera and the narrow beech fern Phegopteris connectilis, a fern rare in Quebec. We learned that, in spite of its name, the lower pinnae pairs are NOT connected by leaf tissue along the rachis in the latter. A non-fertile population of the uncommon narrow-leaved glade fern Diplazium pycnocarpon occurred between the trail and the lake. A single sighting of the triangle moonwort Botrychium lanceolatum along the trail led to many more sightings as more eyes (and cameras) joined in the search.

Lake edge examination of several species of lycopods led to much discussion of the various new and old names in this group as well as their cloning habits identified as "guerilla" and "phalanx". In a particularly lush area at the end of the lake we were fortunate to see large populations of the rare (in Quebec) Giant wood-fern Dryopteris goldiana. The ground here was carpeted with the bulblet bladder fern Cystopteris bulbifera and the silvery glade fern Deparia acrostichoides. Large vigorous patches of the northern maidenhair Adiantum pedatum abounded as well, providing an excellent setting for photographs of the entire group.

Our next site was in the town of St. Armand-Ouest right on the Vermont border in the southwest corner of the Eastern Township region of Quebec. After parking in the driveway of a lovely farm in the valley, we were led uphill by Jacques Labrecque through mixed woods. On the scattered limestone outcrops we were rewarded with views of the walking fern Asplenium rhizophyllum cascading down the sides of a large rock face, with the ebony spleenwort Asplenium platyneuron and blunt-lobed cliff fern Woodsia obtusa tucked among the crevices. The latter is known from only two other sites in Quebec, all near the border. While the rest of us admired a spectacular view across a ravine to Vermont (and occasionally stepped across the remnants of a barbed wire fence that marks the border at this location), Jacques scrambled down a cliff face to bring us a sample of the extremely rare and tiny wall-rue Asplenium ruta-muraria he had recently discovered there only by accident. As

happens with Botrychium, we again spotted one specimen of the rattlesnake fern Botrychium virginianum only to find we had been walking through a large population. The darker green daisy-leaved moonwort Botrychium matricariifolium was not so common however.

Sunday morning saw a somewhat larger group assemble at the Palais des Congres for a trip to the serpentine areas of the Eastern Townships led by Geoffrey Hall. A long discontinuous ridge of serpentine trends southwest to northeast throughout this part of Quebec and is mined for asbestos. Serpentine is a beautiful green rock with large amounts of magnesium and iron. Its composition creates habitat for a suite of plants with very specialized requirements and it is also used for exquisite sculptures seen later in art galleries in Montreal.

The trail to our first serpentine site, overlooking Lac La Rouche, wandered through woodlands where the hay scented fern Dennstaedtia punctilobula and the evergreen wood fern Dryopteris intermedia were abundant. On the steep rock scree cascading down to the lake we saw several small populations of the western maidenhair Adiantum aleuticum. As suggested by its name A. aleuticum in its Canadian serpentine locations is disjunct from its western wooded ravine locations. This situation long ago resulted in the hypothesis that parts of the Gulf of St. Lawrence region were unglaciated during the Pleistocene (Paris 1991).

At our next site, Lac Brompton, we were presented with another interesting species of Adiantum, the Green Mountain maidenhair Adiantum viridimontanum. This species was only recently described (Paris 1991) and is found only on serpentine in north central Vermont and southern Quebec. The population of this regional endemic at Lac Brompton epitomized the term "locally abundant". It grew profusely throughout an area of disturbed serpentine, with various microhabitats ranging from sunny pavement-like scree to shaded woodland resulting in a wide range of growth habits. A small lakeside population of Botrychium multifidum provided lunchtime entertainment. A slightly more strenuous scramble after lunch led to one of the steep rock faces near Lac Brompton where the walking fern Asplenium rhizophyllum and the

smooth cliff-brake *Pellaea glabella* were seen at their northernmost limit.

For more information and complete lists of the ferns seen on these field trips contact Charles Mercier, 12035 Ronald, Montreal-Nord, Quebec H1G 1V8 (mercie@magellan. umontreal.ca) or Jacques Labrecque, 877 Delage app 3, Saint-Foy, Quebec G1V 3X3 (cdpng@mef.gouv.qc.ca) or Geoffrey Hall, 529 rue Wellington Sud, Sherbrooke, Quebec J1H 5E2 (ghall@interlinx.qc.ca).

For information on Mont St.- Hilaire contact Martin J. Lechowicz, Dept. of Biology, McGill University, 1205 Avenue Dr. Penfield, Montreal, Quebec H3A 1B1 (Martin@BIO1.LAN.McGill.CA).

For a free comprehensive guide to the Eastern Township region of Canada - call 1-800-355-5755 or e-mail ate@multi-medias.ca.

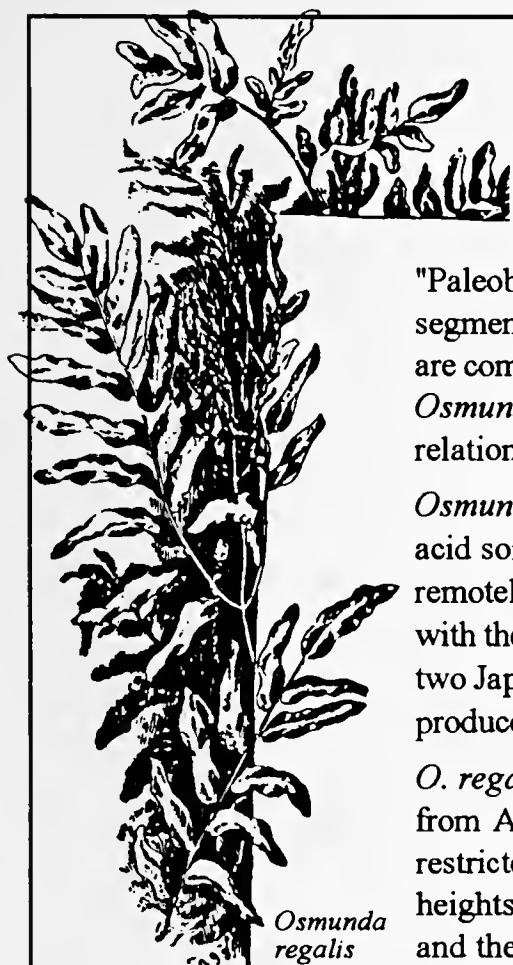
Reference: Parris, Cathy A. 1991. *Adiantum viridimontanum*, a new maidenhair fern in eastern North America. *Rhodora* 93:105-122.



Woodsia obtusa

Osmonda regalis - The Royal Fern

Jim Horrocks - Salt Lake City, UT



As noted in the HFF Newsletter Vol. 3 Number 4 - The Royal Fern Family, *Osmundaceae*, is a very ancient one, first appearing in late Paleozoic (Upper Permian) strata. Quoting from Thomas N. Taylor's "Paleobotany": "Most information about the fossil history of the family comes from structurally preserved stem segments, many of which have been reassigned to extant genera.Isolated osmundaceous sporangia and spores are common in Mesozoic rocks and are typically identical with extant forms.Although the fossil record of the *Osmundaceae* appears extensive, there are numerous gaps in our knowledge about the origin of the family and relationships among the taxa.

Osmunda regalis, also called the Flowering Fern, is a denizen of swamps and bogs growing mostly in strongly acid soil. It may occasionally be found at the edge of streams and lakes. The fronds are rather unique and only remotely resemble those of *O. cinnamomea* and *O. claytoniana*. In a garden collection, it is likely to be confused with the Japanese species *O. japonica* and may even be confused with *O. lancea*, also from Japan. However, the two Japanese species do not have the spore-bearing pinnae on the upper portion of the frond, as in *O. regalis*, but produce separate fertile fronds that are contracted their entire length.

O. regalis is native to North and South America, Europe, and Great Britain. Varieties of it have been described from Africa, India, and China. In North America it grows usually two to five or even six feet high and is restricted mainly east of the Mississippi river, being rather rare west of it. Specimens from Europe have attained heights of ten feet, the huge fronds being stouter and fleshier. Forms with purple stipes and rachises are known and there are varieties with crisped margins, crested segment tips, and in the case of *var. spectabilis*, the segments are thinner and more widely spaced. *O. regalis* has hybridized with *O. claytoniana* to produce *O. X ruggii*.

Description: The compact rootstock is thick and erect, the crown often twelve inches above the surface. The crown arises from a large circular mound of matted rootlets. The stipe is about 3/4 as long as the blade, in some forms glaucous green, but in others, a reddish color and glabrous. The fronds can be up to six feet in height, the color a pea green. The frond is divided into five to nine pairs of opposite pinnae, each bearing six or more pairs of well-spaced oblong pinnules with oblique bases and obtuse to acutish tips. The fronds have an open graceful look. The fertile fronds are like the sterile except that the pinnules of the top three or four pinnae are greatly contracted and made up of clusters of sporangia which are globular in shape and found on the margins of the pinnules. The sporangia split into two sections as the spores ripen. There is no indusium and the green spores remain viable for about 3 weeks.

Culture: This is a magnificent plant for waterside planting and in bog gardens where it will thrive in standing water. It has also been successfully grown in ordinary garden conditions as long as the soil is enriched with peatmoss and leafmold and kept slightly acid and damp. The fronds grow in clusters that are pyramidal in shape rather than vase-like. In the fall, the fronds have seasonal value as they take on a russet brown color. The Royal Fern spreads slowly and growth occurs in a circumferential manner forming a ring of separate plants all originating from the central specimen. For something really different in the fern bed or water garden, *O. regalis* is certainly worth trying. An impressive bit of "Royalty" is a welcome addition to any garden.

References: *The Fern Guide*, (1961) Edgar T. Wherry, Doubleday, New York Field Book of Common Ferns, (1949) Herbert Durand, G.P. Putnam's Sons, New York.

Ferns to Know and Grow (1971) F. Gordon Foster, Hawthorn Books, Inc., New York

Ferns for American Gardens (1994) John T. Mickel, MacMillan Publishing Co., New York

Pteridophytes at The Rockland Botanical Garden, Berks County, Pennsylvania

John Scott, Mertztown, PA

The Rockland Botanical Garden is the privately owned study garden of Mr. & Mrs. John D. Scott, 55 Herzog School Road, Mertztown, Pa. 19539. The Garden was created in 1977 from four acres of old corn field and nine acres of lumbered woodland. Collections currently being developed include over 450 conifers, 157 hardy ferns, and a nine acre native woodland garden with approximately one mile of maintained trails.

The purpose of the Rockland Botanical Garden is to provide systematic and ecological plant collections for study by students in the field. An extensive fern library and an herbarium of the Garden's plants are being developed. Also under development is a computer file of fern literature and fern names.

The property was selected because of the many varied microhabitats. Four acres of old corn-field provide a sunny area for the conifer collection and an organized dicot collection. Artificial habitats include a limestone cobble and a serpentine barren. There is a small stream and a large spring fed bog. A nine acre woodland contains several hundred indigenous plants native to Berks County. Most notable plants include *Botrychium matricariifolium*, *Orchis spectabilis*, and *Habenaria lacera*.

The large list of indigenous pteridophytes was made during the first few years of surveying the woods. To that collection has been added native North American ferns. There is a small section of the woods devoted to Japanese wild-flowers and ferns. The ferns have been purchased mainly from Fancy Fronds, Foliage Gardens., Siskiyou Gardens, and Wildwood. While the hardiness map places the Garden in Zone 6, most of the purchased ferns listed as Zone 6 do not winter over or send up fronds in June and July. If the hardinesses of the ferns are correct, we have a microclimate of Zone 5.

All the plants listed below are currently growing at the Garden. Those marked "*" have been planted during the Spring of 1997.

Plants indigenous to the property (38)

- Adiantum pedatum
- Asplenium platyneuron
- Athyrium angustum
- A. angustum f. elatius
- A. angustum f. rubellum
- A. asplenioides
- A. thelypteroides
- Botrychium dissectum f. dissectum
- B. dissectum f. obliquum
- B. matricariifolium
- B. simplex
- B. virginianum
- B. virginianum (blunt lobed form)
- Cystopteris tenuis (C. fragilis v. mackayii)
- Dennstaedtia punctilobula
- Dryopteris carthusiana (D. spinulosa)
- D. cristata
- D. intermedia
- D. marginalis
- D. x boottii
- D. x Slossonae
- Equisetum arvense
- Lycopodium digitatum (L. flabelliforme)
- L. lucidulum
- L. obscurum
- L. obscurum f. dendroideum
- Onoclea sensibilis
- Osmunda cinnamomea
- O. clatoniana
- O. regalis v. spectabilis
- Phegopteris hexagonoptera
- Polypodium virginianum
- Polystichum acrostichoides
- P. acrostichoides f. incisum
- Pteridium aquilinum v. latiusculum
- Selaginella apoda
- Thelypteris novaboracensis
- T. palustris
- Woodsia obtusa
- C. x tennesseensis
- Dryopteris arguta
- D. campyloptera
- D. celsa
- D. clintoniana
- D. expansa
- D. filix-mas (Canada)
- D. goldiana
- D. x atropalustris (celsa x cristata)
- D. campyloptera x marginalis
- D. celsa x spinulosa
- D. clintoniana x goldiana
- D. clintoniana x marginalis
- D. x dowellii
- D. intermedia x marginalis
- D. x leedsii
- D. ludoviciana
- D. x neo-wherryi
- *D. pseudofilix-mas
- D. x triploidea
- D. x uliginosa
- Equisetum hyemale
- E. scirpoides
- Gymnocarpium dryopteris
- G. dryopteris plumosum
- Lorinseria areolata
- Matteuccia pensylvanica
- Phegopteris connectilis
- Polypodium glycyrrhiza
- Polystichum acrostichoides (bifurcate)
- Polystichum acrostichoides f. crispum
- P. acrostichoides f. multifidum
- P. braunii
- P. x potteri (P. acrostichoides x braunii)
- Thelypteris simulata
- Woodsia oregana
- Woodwardia virginica



Botrychium virginianum

Foreign ferns and cultivars (58)

- *Asplenium fontanum
- Aspleniosorus x crucibuli
- Arachniodes aristata variegata
- A. simplicior v. major
- A. standishii
- Athyrium filix-femina (English cultivars)
 - 'Congestum grandiceps'
 - 'Cristatum'
 - 'Fieldii'
 - 'Frizelliae'
 - 'Minutissima'
- A. niponicum (cultivars)
 - 'Ancient jade'
 - 'Barnes dwarf green form'
 - 'Barnes dwarf gray form'
 - 'Pictum'
 - * 'Ursula's Red'
 - 'Wildwood La Pampa'
 - 'Wildwood Tapestry'

- A. otophorum
- Blechnum penna-marina
- B. penna-marina (crested form)
- * Crytomium macrophyllum
- Cystopteris bulbifera 'crispa'
- Dryopteris affinis (D. pseudo-mas)
- * D. affinis (pseudo-mas) ssp. affinis
- * D. affinis ssp. affinis 'Cristata the King'
- D. affinis 'Crispa'
- * D. affinis ssp. cambreensis
- * D. affinis ssp. cambreensis v. paleaceo-crispa
'Crispa Barnes'
- * D. x complexa 'Robust'
- D. cycadina (D. atrata)
- D. bissettiana
- D. championii
- D. x deweveri
- D. dilatata 'Lepidota cristata' (grandiceps)
- D. dilatata 'Recurvata'
- D. dilatata 'Stansfieldii'
- D. erythrosora
- D. erythrosora f. prolificum
- D. filix-mas (English cultivars)
'Barnesii'
'Cristata 'Martindale'
'Pendans'
(?)
* cristata
- * D. formosana
- D. gymnosora
- * D. kuratae
- D. lacera
- D. nipponensis
- D. polylepis
- D. purpurella
- D. radeana
- * D. remota
- * D. sacrosancta
- * D. uniformis 'Cristata'
- D. wallichiana
- * Lygodium japonicum
- Osmunda japonica
- * O. regalis 'Crispa'
- * O. regalis 'Cristata'
- * O. regalis var. regalis 'Purpurascens'
- * Phyllitis scolopendrium
- Polysticum makinoi
- * P. rigens
- P. tripteris
- Thelypteris decursive pinnata
- Woodsia manchurensis
- W. plumeriae
- W. polystichoides



1984 - A Year of Problems for Tree Ferns - Some General Observations

A. G. Sonter, Sonter's Fern Nurseries, New South Wales, Australia

Our nursery has been producing the tree fern, *Sphaeropteris cooperi* (syn. *Cyathea cooperi*) from spores for more than ten years.

Quite suddenly in 1984, although the spores germinated as usual, the prothalli degenerated and production dropped to almost zero. The same phenomenon occurred simultaneously in nurseries in Perth and Sydney.

About the same time, enquiries began to flood in from tree fern growers around Australia whose production from spores had failed. Within a period of two months growers had contacted us from Darwin, Cairns, Brisbane, Adelaide, Melbourne, and a host of other areas all around Australia, all with the same story - their spore production had failed. Buyers informed us there was an Australia-wide shortage of tree ferns.

Over the next four months we increased our spore sowing tenfold and for the next three months I spent my time trying to solve the production problems.

The following things were tried:

1. Spores were collected from many remote areas around Australia from natural tree fern populations - from Bedford in Western Australia to Atherton in Queensland.
2. Spores were sterilized.
3. A wide range of sowing media were tried, including peat moss, sawdust, pine bark, perlite, vermiculite, and a range of combinations of these.
4. The pH was varied from 4.0 to 8.0.
5. The daylength was varied from 8 to 24 hours.
6. The humidity was varied.

7. A wide variety of fungicides were tried.

Results were no better - the crop still failed.

Numerous samples of prothalli were tested by laboratories around Australia who constantly diagnosed: "no diseases and no pests - it must be an environmental problem".

Suddenly at the end of 1984 most of the prothalli in our trials stopped degenerating and grew beautifully, irrespective of media, light, temperature, etc. The only failures were in the widest ranges of the trials.

It should be noted that prior to 1984 we were producing over 100,000 tree ferns a month from spores, covering a range of about thirty different cultivars, and there were no problems of degenerating prothalli.

By the end of March, 1985, after three months of successful production, most of our grower customers had cancelled their orders because their own production was now "doing nicely". This is being written in May 1985, and there are tree ferns everywhere.

Our nursery has produced many millions of ferns from spores and we have been very conscious that many cultivars can be destroyed by a single factor being out of line, at any time.

It is my considered opinion that the minute, delicate *Cyathea cooperi* spores which are responsive to the most minuscule of variations in the complex balance of environment, media, and nutrients have, during this period of 1984, been indicating to us in a very real way, a change in the earth's total environmental balance. We do not know what changed - perhaps radiation, atmospheric gases, or a host of factors, but we do know that something did happen, and the tree fern spores in their own way told us about it.

Incidentally, we have since sown more of each batch of spores collected around Australia in 1984 and they have all grown successfully, with only normal losses.

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Fern Ratings in Zone 6A

Dear Ms. Olsen:

I live in an area east of Louisville in zone 6a. We have occasional years where the minimum temperature is as low as -15 to -20F. However, our major problem with temperature comes with the sudden spring freezes after a period of warm weather has completely broken winter dormancy. We had one this year which damaged a considerable number of ferns including *Dryopteris marginalis*, *Osmunda* species and *Matteuccia struthiopteris* as well as Japanese maples all over town. Summer temperatures reach the middle upper eighties for average highs. We usually have several periods in the nineties with lows in the seventies at night with 100 percent humidity as well as periods of no Rainfall. All in all a challenging place to raise ferns.

The fern beds are generally on slopes shaded by large hardwood trees ie: oaks, hickory, ash, and maple. One bed is along a creek bank which sometimes runs full with run-off from rain. We had 13 inches of rain this spring in twenty four hours. It washed out some ferns completely as well as undercutting the crowns of others in various beds. I did not include those ferns in my rating as I believe that it was abnormal damage. For this reason the rating list does not contain some ferns in previous inventory lists.

A second creekside bed is on a bank covered with large pieces of crushed limestone rock to control erosion. I have established the 'lime-lovers' in this area. The main problem seems to be slugs or whatever that likes ferns in this situation.

Ralph C. Archer - Louisville, KY

NAME	RATING	YEAR PLANTED
<i>Adiantum pedatum</i>	2	1996
<i>Adiantum venustum</i>	2	1996
<i>Arachnidioes simplicior 'Variegata'</i>	2	1996
<i>Asplenium platyneuron</i>	3	1995
<i>Athyrium angustum forma rubellum</i>	4	1994
<i>Athyrium asplenioides</i>	4	1994
<i>Athyrium filix-femina 'Corymbiferum'</i>	4	1995
<i>Athyrium niponicum 'Pictum'</i>	5	1990
<i>Athyrium otophorum</i>	4	1995
<i>Camptosorum rhizophyllum</i>	3	1995
<i>Cheilanthes argentea</i>	0	1996
<i>Cystopteris bulbifera</i>	5	1995
<i>Dennstaedtia punctilobula</i>	3	1993
<i>Dryopteris affinis 'Crispa Gracilis'</i>	3	1996
<i>Dryopteris affinis morph affinis</i>	3	1996
<i>Dryopteris affinis 'Cristata the King'</i>	3	1996
<i>Dryopteris affinis 'Crispa'</i>	4	1995
<i>Dryopteris bissetiana</i>	4	1995
<i>Dryopteris carthusiana</i>	3	1995
<i>Dryopteris complexa</i>	4	1995
<i>Dryopteris cristata</i>	4	1995
<i>Dryopteris dilatata 'Jimmy Dyce'</i>	2	1995
<i>Dryopteris dilatata 'Lepidota Cristata'</i>	2	1995
<i>Dryopteris erythrosora</i>	3	1994
<i>Dryopteris filix-mas</i>	3	1995
<i>Dryopteris filix-mas 'Crispa Cristata'</i>	3	1994
<i>Dryopteris filix-mas 'Cristata Jackson'</i>	4	1995
<i>Dryopteris filix-mas 'Grandiceps'</i>	4	1995
<i>Dryopteris filix-mas 'Linearis Polydactyla'</i>	4	1995
<i>Dryopteris intermedia</i>	3	1995
<i>Dryopteris marginalis</i>	3	1994
<i>Dryopteris nipponensis</i>	2	1995
<i>Dryopteris remota</i>	5	1995
<i>Dryopteris submontana</i>	3	1996
<i>Dryopteris uniformis</i>	3	1995
<i>Matteuccia struthiopteris</i>	5	1990
<i>Onoclea sensibilis</i>	5	1996
<i>Osmunda cinnamomea</i>	5	1993
<i>Phyllitis scolopendrium</i>	3	1996
<i>Phyllitis scolopendrium 'Kaye's lacerate'</i>	0	1996
<i>Polystichum acrostichoides</i>	5	1990
<i>Polystichum lonchitis</i>	0	1995
<i>Polystichum makinoi</i>	3	1995
<i>Polystichum polyblepharum</i>	2	1995
<i>Polystichum tsus-simense</i>	3	1996



Onoclea sensibilis

The Hardy Fern Foundation

NEWSLETTER

The Hardy Fern Foundation Newsletter is published quarterly by the Hardy Fern Foundation, P.O. Box 166, Medina, WA 98039-0166.

Articles, photos, fern and gardening questions, letters to the editor, and other contributions are welcomed!

Please send your submissions to Sue Olsen, 2003 128th Ave SE, Bellevue, WA, 98005.

Newsletter:

Editor: Sue Olsen

Assistants: Janet Dalby, Sylvia Duryee, Sue & Herman Entz

Graphics: Karie Hess

The 1997 HFF Spore Exchange

It is finally that time of year when we can get back to growing the plants that we all love so much. There are again fewer ferns listed and many are getting a little old. We need a big revival of spore donations if we are going to keep this exchange as vibrant as it has been in the past. I have no magic source of spores, all of the spores come from members such as yourself. So let's get out there in the woods or your local HFF satellite garden, or conservatory and ship them out to your fellow ferners post haste!!!

There were 6 donors last year, less then 10% of the members, we can do better. The people listed below made the special effort and sent in spores. They all deserve a thank you from the rest of us, they are listed in random order.

Sylvia Duryee, Iris Gaddis, Keith Rogers, Wendy Born, Jocelyn Horder, Sue Olsen

To Order: Please print your selections clearly in **alphabetical** order (not by number, please) order using the genus, species, and cultivar. Include 25 cents for each fern requested (check payable to the Hardy Fern Foundation) and a **self-addressed stamped envelope**. No charge for overseas members, but please enclose an international postal coupon (2 for larger orders) and an envelope. **Maximum order 25 per year.** Mail requests to:

Wayne "Bubba" Baxter
307 Riverdale Cir.
Stephenson, Va. 22656
USA
Email fernbubb@visuallink.com

The descriptive columns are **Pk** packets available, **Z** the coldest zone this fern has been reported to have grown in, **SZE** in inches, **GROWTH** habits listed below, **Coll.Site** if collected in the wild, **Orig** their natural range, **Donor** Listed by the most recent year the spore was donated followed by the donors number.

1 Rare fern	N	Moist soil	B	Tree fern
2 New Fern	S	Shade	G	Spdg habit
3 Few spores	T	Part Sun	K	Terrestrial
\$ GreenSpore	U	Bright Sun	F	Aquatic
\$\$\$ GreenSpore with Donor	H	High Humidity	V	Deciduous
A Alkaline	L	Soil Specific	O	Evergreen
Z Acid soil	R	Rocky Soil	Y	Dimorphic
D Dry Soil	C	Climber	E	Easy 2 grow
W Wet soil	J	Epiphytic	Q	Hard 2 grow

PS This note is for everyone that has not donated spores, donors please ignore this. The rest of us need to consider that there is no endless source of spores that I can tap into. All of the spores come from members like you. If there are not enough donations then the quality of the whole exchange is affected. Please take time during the next year (it isn't really that much time, I have done it many times myself) to focus on the ferns in your area or country and get them on the exchange. There are ferns that are indigenous to everyone's area (get a fern book out and have a look) that other members can't get otherwise. Many of the spores on the list are old or few in number, even common ferns need fresh spores or their viability plummets. The Hardy Fern Foundation Spore Exchange is a unique institution and with your help it will continue to be the best in the world. Thank you for your help.

DN#	FIRST	LAST	DN#	FIRST	LAST
1	Brian	Atkins	195	Judith	Bathman
2	Wayne	Baxter	197	John	Thompson
4	Wendy	Born	99	Christian	Wingard
5	Mrs Alice J.	Burkman	100	Dr Bruce	Young
6	Anne Marie	Davis	101	Marge	Baird
7	Sylvia & Phil	Dunves	102	Margaret	Nimmo-Smith
8	Leslie	Dutts	103	E. MD.	Hinch
9	Patrick	Dwyer	109	Richard	Piper
10	Sue	Entz	105	Ervin J.	Leachland
11	Iris	Gaddis	106	Berry	White
12	Wolfram	Gesemer	107	Beverly	Edney
13	Chris	Gaudy	108	Catherine	Gulha
14	Eldred	Green	109	Phyllis P.	Green
15	Greg	Haines	110	Linda and	Holley San
16	Neil	Hall	111		HFF
17	Marguerite	Hartmann	112		AFS/NYBG
18	Kenneth	Hanover	113	Naud	Burnett
19	Leslie	Hartfield	114	J. C.	Purter
20	Jocelyn	Horder	115	Gretchen	Gould
21	JR	Homocots	116	Rufina	Otero
22	Barbara Joe	Hochschild	117	Dr. Donald	Ferner
23	Guy	Huntley	118	Karen	Thorat
25	Judith	Jones	119	Eva C.	Link
29	Harold Dr.	Kasper	120	Dr Al	Bartram
27	Dr. Irving	Krobothan	122	Mrs Hiroko	Sasaki
28	Mareen	Kruegerberg	123	Beth	Feverstein
29	Robert W.	Lake	124	Michael	Garnett
30	Donald	Leslie	125		HFF Lehmann
31	Stuart	Lindsey	126	Jason	Noy
32	Lynn	Maloy	127	Ted	Evans
33	John & Marcella	MacEachell	128	James A.	Rollins
34	Dr. John T.	McGill	129	MICHAEL	HEIM
35	Mary	Muller	130	Lord & Vere	Barton
36	Sue	Oliver	131	Robert	Muller
37	Barbara S.	Parris	134	Sandra	Constantino
38	Kerrie M.	Pettus	135	Wim	Tavernier
39	Ivan	Pfeiffer	138	D.J.	Batten
40	John & Grace	Putnam	139	Cynthia	Forden
41	Marlin	Richtard	140	Jack	Schieber
42	Jim	Ruch	141	Alan	Smith
43	Prof.	Seki	142	Steve	Perry
44	Kevin W.	Senters	143	Wally	Reed Jr
45	PhDr. Zdenek	Selbert	144	Jean	Lundberg
46	John & Irma	Siglo	146	hue	Menderville
49	William	Thompson	147	Dr. Howard	Hinde
50	Fred &	Timm	148	Mary Ellen	Torresina
52	Samuel	Turney	149	Judy	Quarecht
53	Dr. T.W.	Turney	150	Jens Henrik	Nelson
54	Dr. Cor	Van de	151	Martens	Fairbourne
55	Mrs. Sandra	Vandermost	152	Mogens	Huse
56	Suzette	Vicentini	153	Owen	Hammerstrom
57	Lee	Witz	155	Brian E.	Nash
58	Bruce	Waterson	156	Poppy	McGill
59	Elmo	Weeks	157	Stephen J.	Coppens
60	Reginald	Keene	158	Claire	Minne
61	Igorov	Kube	159	Nancy	Sherlock
62	John	Adkins	160	Stanislava	Hoskova
63	Don	Agostinelli	161	Dawn	Steger
64	Diane & Ken	Attarbury	162	Donald	Yenneur
65	Roger	Borres	163	Ann	Herrington
66	Dorothy	Brow	164	Joost	Veldekkamp
67	Edmund	Cave	165	Harold	Frank
68	Eileen	Clause	166	Ivan	Shulster
69	Michael	Concannon	167	Louise	Parsons
70	Lothar	Denkowitz	168	Gerold	Kranz
71	Don & Joyce	Drie	169	Lyle	Winkel
72	Joschim	Ehlers	170	Frank	Damgaard
73	John	Game	171	Mark	Day
74	Robert	Gernin	172	Frank	Peel
75	Johann	Khaze	173	Peter	Poders
76	Jean	Gruber	174	Carolyn	Stamm
77	Laura	Gustin	175	Fran	
78	Edward	Hartman	176	Joan	Gottlieb
79	David	Hughes	177	Shane	Berry
81	Yoshio	Kato	178	Fran	Rice
82	Ishuza	Kunwabata	179	Janet	Yang
83	John	Krouse	180	Don	Lucin
84	Helen Mire	Kuhane	181	Roger	Hughes
85	Dorothy	Kumb	182	Angela	Randall
86	Dr. David B.	Leitinger	183	Dr. James	McClements
87	John and	Merley	184	Aaron	Edwards
88	Hiroti	Miyazaki	185	Prof. P.	Berthel
89	Patricia	Moscati	186	Fabien	Ahern
90	Craig	Sault	187	Uyen	Lesouef
91	Dr. Elizabeth	Sheffield	188	Clive	Jenny
93	Frank Mrs	Skute	189		Anonymous
94	Mel	Sonter	190	Norman	Ruskin
95	Dr. David	Straney	191	Susan	MacQueen

DN#	FIRST	LAST
182	Ben	van Wierst
183	Douglas	Dempwold
184	Robert	Haley
185	Dave	Abbot
186	Keith	Rosen
187	H. John	Barnes
188	Tim	Keeschich
189	Michael	Richards

HR	GENUS	SPECIES	CVR	PK	Z	SZE	GRO	COLL.SITE	ORIG	DONOR
1	Adiantum	aethiopicum		6	7	32	2TWGE		NzAusAfr	97/7
2	Adiantum	aleuticum		25	4	12	TKGELN		PacNW Jap	96/10 94/97
3	Adiantum	aleuticum	serpentine ecotype	10	2	12	GJTELN		alaska.nw usa	92/25
4	Adiantum	aleuticum	subpumilum	2	3	12	1ZSNEG		NW N.hem	96/20 95/36
5	Adiantum	diaphanum		5	8	10	3EWSHZ		Aust,NZd, Fiji, Norfolk	96/1 94/9
6	Adiantum	hispidulum		15	8	14	SNTEZH		AusEHemTrop	97/181
7	Adiantum	pedatum		25	2	20	ENSZK		US Jap	97/173 96/18
8	Adiantum	Pedatum	Miss Sharples	2	3		2NSZ		US	96/173
9	Arachniodes	lanstata	variegata	20	6	36	SZND		Easia, Aust.	96/10,156
10	Arachniodes	miqueliania		2	5	24	GK		Easia	95/12 92/43
11	Arachniodes	simplicior		15	6	30	EKTZM		Easia	97/181
12	Arachniodes	simplicior	variegata	10	7	30	SNEM		Easia	97/182 96/146
13	Arachniodes	standishii		10	6	18	TNKM		JpKor	96/157 95/70
14	Arthroptens	Orientalis		5	8	18	ZSJW		Afr	94/149
15	Aspidium	aculeatum		2	6				NEur	94/9
16	Asplenium	adiantum-nigrum	adiantum-nigrum	50	6	14	RANT		Eur.NA.Af	97/7.193 96/45
17	Asplenium	adiantum-nigrum	Silesiacum	1	6	14	RANT		Eur	96/45
18	Asplenium	billotii		1	5	10	QZTK		Eur	95/10 94/9
19	Asplenium	cuneifolium		16	6		R		Eur	94/45
20	Asplenium	Dahlousia		1	7	10	1RK		AzoresHimalav	
21	Asplenium	flaccidum	terestre	3	8	30	NTK		Aus	96/164 94/110
22	Asplenium	fontanum		4	5	5	ZNRSG		Eur	96/45 94/9,97
23	Asplenium	fonsiense		4	8	6	ATRN		Eur	95/135 94/9
24	Asplenium	Lunulatum		1	8	18	SH		S.Af	95/53
25	Asplenium	Milnei		5	8	32	12ESN		AusLrdHowels	97/196
26	Asplenium	monanthes		1	7	12	1RTNZ		S.US,SAmAWIndies	97/7
27	Asplenium	Nesii		2	8	8	12K		Tien-Shan	96/45
28	Asplenium	nidus		20	8	60	HZNTJK		N.Guin,jap,ryukyu Is.,	95/9,166 94/11
29	Asplenium	nidus	Avis	5	8	60	2HZNTJ		N.Guin,jap,ryukyu Is.,	96/158
30	Asplenium	obliquum		5	8	48	KATNH		NZ	92/116
31	Asplenium	oblongifolium		18	8	48	SNK		Nz	97/11,196 95/9
32	Asplenium	obovatum	lanceolatum	10	7	6	ATNH		Eur	95/9 94/154
33	Asplenium	onopteris		3	6	18	1RZKNT		Eur	96/45,185 95/9
34	Asplenium	pinnatifidum		3	5	5	ZNSK		E USA	97/193,83
35	Asplenium	platyneuron		15	4	18	DAENT		E USA	97/173 96/8
36	Asplenium	Praenooides		5	8	24	2NSE		Aus	97/196
37	Asplenium	rhizophyllum	large form	10	4	12	1ANTKO		NAm	96/173
38	Asplenium	ruta-murana		10	4	5	QANU		N. Hem	96/45 95/9,150
39	Asplenium	Scleropnum		6	6		KSNE		NZ	97/196
40	Asplenium	scolopendrum		8	6	12	1ANSK		NHem	94/150,152,97
41	Asplenium	scolopendrum	Americanum	20	6	12	1ANSK		NHem	97/173
42	Asplenium	scolopendrum	AmericanumForkedFronds	20	6	12	2ANSK		NHem	96/173
43	Asplenium	Scolopendrum	Supra marginatum	5	6	12	ANSK		NHem	97/155
44	Asplenium	scolopendrum	Undulatum	4	6	12	2ANSK		NHem	97/173
45	Asplenium	septentrionale		4	4	6	1QZDTK		NHem	96/45
46	Asplenium	septentrionale	septentrionale	3	4	5	1QZDT		N. HEM	95/9,2
47	Asplenium	trichomanes		10	2	9	1ANTKO		Cosmo	96/164,173
48	Asplenium	Trichomanes	Hastatum	3	2	9	1ANTE		Switz	96/45
49	Asplenium	trichomanes	Incisum	6	2	9	1ANTE		Eur	96/45,158 94/36
50	Asplenium	trichomanes	Lovisianum	2	2	9	2ANTKO		Switz	96/45
51	Asplenium	trichomanes	lucanum	9	2	9	1ANTE		Austria	96/45
52	Asplenium	trichomanes	maderense	3	2	9	1ANTE			
53	Asplenium	trichomanes	Melzeranum	3	2	9	1ANTE		Austria	96/45
54	Asplenium	trichomanes	Moravicum	1	2	9			Moravian	96/45
55	Asplenium	trichomanes	Pachyrrachis	4	2	9	1ANTE		Czech	96/45
56	Asplenium	trichomanes	quadivalens	10	2	9	1ANTE		Eur	96/45 95/9
57	Asplenium	trichomanes	trichomanes	3	2	9	1ANTE		Eur	95/61 94/45
58	Asplenium	x lusaticum		2	5	9	13		Germ	96/45
59	Asplenium	x poscharskyanum		3	5				Germ	94/45
60	Asplenoceterach	x Badense		1	8				Eur	95/61
61	Asplenosorus	x ebeneoides		5	7	12	1ANRK		NAm	96/36,153,173
62	Astroleopsis	sinuata		5	6	10	AUDK		TexMex	95/11
63	Athyrium	asplenoides		2	3	48	EKNZS		SE USA	94/9 93/9 92/9
64	Athyrium	deltoidofrons		1	6	24	TK		Jap,Ch,Kor	96/45 92/88
65	Athyrium	distentifolium		8	3	24	RTVKN		far N Hem	95/12,8
66	Athyrium	filix-femina		40	3	48	ZNTKEV		N. HEM	97/181,108
67	Athyrium	filix-femina	Anaustum	5	3	48	ZNTKEV		N. HEM	96/129
68	Athyrium	filix-femina	Asplenoides	1	3	48	ZNTKEV		N. HEM	95/9
69	Athyrium	filix-femina	Bornholmense	1	3	48	ZNTKEV		NEur	
70	Athyrium	filix-femina	Corymbiferum	2	3	48	3ZNTKO		N. HEM	96/174 94/45
71	Athyrium	filix-femina	cristatum	15	3	48	ZNTKEV		N. HEM	96/174 95/141
72	Athyrium	filix-femina	cristulatum	15	3	48	ZNTKEV		N. HEM	96/174 95/141
73	Athyrium	filix-femina	Cruciato-cristatum	5	3	48	ZNTKEV		N. HEM	96
74	Athyrium	filix-femina	CurtumCristata	4	3	48	ZNTKOV		N. HEM	96/45
75	Athyrium	filix-femina	Frizelliae	4	3	48	ZNTKEV		N. HEM	96/173 95/2
76	Athyrium	filix-femina	Grandiceps	2	3	48	2ZNTKE		N. HEM	96/173
77	Athyrium	filix-femina	Minutissimum	20	3	48	ZNTKOV		NUsa	96/174,173 95/2
78	Athyrium	Filix-femina	multifidum	3	3	48	ZNTKOV		N.Hem	94/141
79	Athyrium	Filix-femina	Polydactylus Darley Dale	1	4	48	ZNTKOV		NHem	94/45
80	Athyrium	filix-femina	redstipes	8	3	48	ZNTKEV		N. HEM	96/52 93/12
81	Athyrium	filix-femina	rubellum	8	3	48	ZNTKEV		N. HEM	97/181 95/156
82	Athyrium	Filix-femina	Rubripes	8	3	60	ZNTKOV			94/148
83	Athyrium	filix-femina	Sitchense	1	3	48	ZNTKEV		USA	
84	Athyrium	filix-femina	Vernoniae cristata	20	3	36	ZNTKEV		N. HEM	96/174,182
85	Athyrium	filix-femina	Victorae	5	3	48	ZNTKEO		N. HEM	97/156 96/10
86	Athyrium	Goeranqianum Pictum	Samarai Swords	5	5	24	2E		Easia	97/173
87	Athyrium	niponicum		1	4	18	ZNTV		Easia	96/181 94/9
88	Athyrium	niponicum	Metallicum	3	4	18	EZNTV		Easia	
89	Athyrium	niponicum	Pictum	60	3	18	ZNTVE		Easia	97/181
90	Athyrium	niponicum	Pictum Tall type	8	3	24	ZNTVE		Easia	96/182

HFF	GENUS	SPECIES	CVR	PK	Z	SZE	GRO	COLL.SITE	ORIG	DONOR
91	Athyrium	Obovatum		2	5					96/173
92	Athyrium	otophorum		20	4	24	SKENT		Easia	97/7.11
93	Athyrium	pvcnacarpum		20	4	48	ANTVK		N Am	97/173.52.156
94	Athyrium	rubripes		1	6		3		Siberia	94/45.93/9
95	Athyrium	Thelypteroides		20	3	36	TWZV		NHemS&Easia	97/108.96/181
96	Athyrium ?	Unk.	Bradford Beauty	2	5		2K			96/173
97	Athyrium	vidalii		10	3	24	TKE		Ko.Jp.Tai	96/173.94/45
98	Athyrium	yokoscense		6	4	10	K		Kunlun.Easia	97/7.96/45.93/36
99	Azolla \$\$\$	Caroliniana		10	8	1	EFWGH		N Am	95/2
100	Azolla \$\$\$	Filiculoides		10	6	1	EFWGH		Cosmo	95/2
101	Blechnum	Ambiguum		6	8		K		Aus	95/106
102	Blechnum	Capense ?		5	7				NZ	96/36
103	Blechnum	chambersii		25	8	116	WK	Aus	Aus.NZ.Poly	97/106
104	Blechnum	discolor		20	5	38	WTKN		NZ	97/162.95/9
105	Blechnum	fluviatile		40	8	24	RSHWK	Aus	Aus.NZ	97/162.106
106	Blechnum	fraserei		9	8	24	2RSHW		NZ	97/162
107	Blechnum	Lehmannii		10	8					96/162
108	Blechnum	minus		20	6	40	WOTK		Aus.NZ	97/57.106.95/9
109	Blechnum	minus x wattsii		5	6	12	WUK		AusNZ	97/57
110	Blechnum \$	nudum		20	8	40	SZWNK		Aus.Af	94/106
111	Blechnum	penna-marina		10	5	9	GUOWR		SHem	97/193.95/160
112	Blechnum	Procerum		10	8	30	KS		EindiesMexNZ	97/162.95/9
113	Blechnum	spicant		30	5	28	ZESWY		N. Hem.Pac nw	97/199.96/36.34
114	Blechnum	spicant	Crispum	2	5	24	ZESWY		N. Hem	97/36.95/36
115	Blechnum	spicant	Redwood giant	2	4	30	NTYK		N.Calif	97/36.94/4
116	Blechnum	Wattsii		5	6	12	2WUOS		AusNZ	97/57.106
117	Botrychium	dissectum	dissectum	6	3	18	QLZTNK		N.Am	97/189.93/9
118	Botrychium	dissectum	obliquum	6	4	18	QLZTNK		N.Am	97/189.93/120
119	Botrychium	texnatum		4	8		QLZT		Japa	93/43
120	Botrychium \$\$\$	Virginianum		10	3	16	QZVSKM		NHem	97/195.95/8
121	Camptosorus	rhizophyllus		4	3	6	INTAOK		E.NAm	97/156.96/161
122	Campyloneurum	angustifolium		15	8	24	HSNJ		C&S.Am	96/164.95/165
123	Cheilanthes	alabamensis		8	6	18	DUAK		S.US.C Am.W indies	92/104
124	Cheilanthes	argentea		8	4	6	DUZK		Nasia.Siberia	96/150
125	Cheilanthes	Distans		15	7	7	DTZK		Aus.NZ	96/1.18.92/104
126	Cheilanthes	Eatonii		8	4	10	DUAR		SW US	94/20.145.146
127	Cheilanthes	Feei		4	5	8	QRADU	Wisc.	NW N. Am	97/198.1
128	Cheilanthes	ianosa		6	5	12	NSZKO		Se N. Am	96/173.95/8
129	Cheilanthes	lasiophylla		16	8	15	DUK		Aus	97/173.96/150
130	Cheilanthes	lendiqera		2	8	10	1DUKE		S.Tex.Az Mex	94/11
131	Cheilanthes	Persica		3	8		2DUR		Turkey	96/45
132	Christella	subpubescens		3	8	24	QSWK		JpAusMalayPhilip	93/43
133	Colysis	Hemionitidea		3	8	12	KHSJ		EasiaSasia	96/3
134	Colysis	wrightii		1	8	12	NR		Easia	94/27
135	Coniogramme	intermedia		4	7	36	GWTZO		EasiaIndia	95/106
136	Coniogramme	japonica		2	7	48	NSK		E. asia	95/157.93/9
137	Comptoptens	crenulatoserrulata		5	6	36	SNK		Easia	95/12
138	Cryptogramma	acrostichoides		10	2	10	ZURDAK		W US	94/1.92/97
139	Cryptogramma	Crissa		25	6	18	NUAK		EurWasiaAf	96/20.185
140	Cryptogramma	Stelleri		1	3	6	2RDG	Wi	nNAm.Nasia	97/198
141	Ctenitis	Maximowicziana		8	8	24	KO		Jap	95/88
142	Culcita	Macrocarpa		4	8	58	ZNSHOE		SpainAzores	97/187.95/9
143	Currania	dryopteris		1	6	9	3GNSK		NHem	92/8
144	Cyathea	australis		40	8	120	BUZNK		Aus.NZ	97/193.57
145	Cyathea	Brentwood		20	8	200	B		Aus	96/87
146	Cyathea	brownii		60	8	200	1BTNEK		Norfolk is	97/57.96/87.117
147	Cyathea	cooperi		20	8	200	BWTK		AusNZ	96/177.94/94
148	Cyathea	cooperi	blue form	15	8	200	1BWSK		AusNZ	96/87
149	Cyathea	cooperi	Brentwood	20	8	200	1BWS		Aus	96/177.92/87
150	Cyathea	cooperi	Cinnamomia	20	8	200	2BWTK		SydneyAus	97/196
151	Cyathea	cooperi	Coastal form	20	8	200	BWTK		AusNZ	96/177
152	Cyathea	smithii		20	8	200	1BTNK		NZ	97/162.95/9
153	Cyathea	Tomentosum		10	8	72	BN		NGuinea	94/94
154	Cyathea	Woolsiiana		8	8	120	BUZNK		Aus.NZ	97/106.96/87
155	Cyclosorus	interruptus		6	8	48	KWEU		S&EasiaAus	95/106
156	Cyrtomium	caryotideum		4	6	24	ZNTKEO		India,Easia,Hawai	96/173.94/156
157	Cyrtomium	falcatum		50	6	24	RTNEKO		E&Sasia	96/158.95/9.157
158	Cyrtomium	falcatum	Crested	7	6	24	RTNEKO		E&Sasia	95/163
159	Cyrtomium	falcatum	Rochfordianum	5	6	20	RSNEKO		Jp.ChKor	93/36.92/7.97
160	Cyrtomium	fortunei		50	5	24	ZNTKEO		JpChKor	97/182.156
161	Cyrtomium	lonchitiforme		8	6	12	EK		China	97/11.95/150
162	Cyrtomium	Unk	Litorale	10	5		K			96/173
163	Cystopteris	alpina	Rezia	5	5	12	SNA		Eur	95/150.93/12
164	Cystopteris	dickieana		9	5	10	NTAVR		EurNAm	94/12.45.97
165	Cystopteris	fragilis		50	4	12	ZNTVKE		Cosmo	97/1.96/164.24
166	Cystopteris	fragilis	anthriscifolia	3	2	16	3ZNTEK		Cosmo	94/45
167	Cystopteris	fragilis	Fine Form	2	2	12	EZNTVK		Cosmo	94/24
168	Cystopteris	protusa		1	5	16	INTEGK		E US	96/174.156.8
169	Cystopteris	sudetica		6	5	10	GK		Eur.Easia	94/12.45.93/9
170	Davallia	Griffithiana		2	8	20	EG		Easia	97/191.95/160
171	Davallia	Plumosa		5	8	18	2TN		Samoa	97/196
172	Davallia	Plumosa	Samoa	5	8	18	2TN		Samoa	97/196
173	Davallia	species		2	8				taiwan	94/12
174	Dennstaedtia	punctiloba		10	3	18	UNGKE		N.A.	97/181.83
175	Deparia	Acrostichoides		20	3	36	TWZV		NHemS&Easia	97/198
176	Deparia	japonica		2	8	10	NEK		IndiaNZJp	95/27.93/26
177	Deparia	petersonii		9	8	22	Gs		Georgia	96/1
178	Dicksonia \$\$\$	antarctica		30	8	120	IBSUNK		AusTasmania	97/57.196
179	Dicksonia \$\$\$	fibrosa		10	7	120	1BEONU		NZ	95/9.94/25
180	Dicksonia	lanata		3	8	190	BZSWK		NZ	97/162

HFF	GENUS	SPECIES	CVR	PK	Z	SZE	GRO	COLLSITE	ORIG	DONOR
181	Dicksonia	<i>sellowiana</i>		4	8	120	1BSWNE	C&S Am.	97/11 92/9,106	
182	Dicksonia	<i>squarrosa</i>		9	8	120	1BTNQK	NZ	97/162,57	
183	Dicksonia	<i>youniae</i>		5	8	120	BENT	Aus	92/9,87,106,114	
184	Diphasiastrum	34 <i>Complanatum</i>		2	2	8		IN NAm	94/9	
185	Diplazium	<i>Acrostichoides</i>		9	5		K	Ny	96/173	
186	Diplazium	<i>Assimile</i>		11	8	60	KWS	Aus	95/106	
187	Diplazium	<i>chinense</i>		1	8	24	13	Easia	93/43	
188	Diplazium	<i>Mettenianum</i>	<i>tenuifolium</i>	6	8	24	KV	Jap	95/88	
189	Diplazium	<i>Plantaginefolium</i>		20	8			Venez.	96/11	
190	Diplazium	<i>pycnocarpon</i>		4	3	32	WS	E. N.A.	94/8 93/9	
191	Diplazium	<i>Tomataroanum</i>		5	8	5	2RM	ChJap	97/191	
192	Doodia	<i>Aspera</i>		15	6	15	UNG	AusNZ Norf is	95/9,157 94/94	
193	Doodia	<i>media</i>	<i>australis</i>	20	7	10	TWNZR	AusNZ Norfolk Island	95/9,170	
194	Doodia	<i>media</i>	<i>Cairns</i>	1	8	10	TWNZR	NZAusNewCaled	94/1,135,10	
195	Doodia	<i>media</i>		20	7	10	TWNZR	AusNZ Norfolk Island	94/94 93/1,109	
196	Dryopteris	<i>abbreviata</i>		8	5			Eur	94/45	
197	Dryopteris	<i>aeemula</i>		1	6	20	SNKEHM	W.Eur		
198	Dryopteris	<i>affinis</i>		10	3	48	SNTKE	Eur SWAsia	96/158 95/12,2	
199	Dryopteris	<i>affinis</i>	<i>affinis</i>	12	3	48	SNTKE	Eur SWAsia	96/45,153 95/9	
200	Dryopteris	<i>affinis</i>	<i>affinis punctata</i>	10	3		SNTKE	Eur SWAsia		
201	Dryopteris	<i>affinis</i>	<i>azoncum</i>	2	3	48	SNTKE	Azores	96/45	
202	Dryopteris	<i>affinis</i>	<i>borreri</i>	20	3	48	SNK	Eur SWAsia	96/45 95/135	
203	Dryopteris	<i>affinis</i>	<i>borreri, Pseudodisjunta</i>	20	3		SNTKE	Eur	96/45	
204	Dryopteris	<i>affinis</i>	<i>borreri robusta</i>	20	3	48	SNK	Eur SWAsia	96/45 94/135	
205	Dryopteris	<i>affinis</i>	<i>cambreensis</i>	20	3	36	SNVTKE	Eur SWAsia	96/45,153,185	
206	Dryopteris	<i>affinis</i>	<i>Coriacea</i>	4	3	24	SNTK	Iran	96/45	
207	Dryopteris	<i>affinis</i>	<i>Crispa</i>	1	3	48	SNTKE	Eur SWAsia	97/173	
208	Dryopteris	<i>affinis</i>	<i>Crispa stableri</i>	5	3	48	SNTKE	Eur SWAsia, Eng	94/25 93/36	
209	Dryopteris	<i>affinis</i>	<i>Cristata "The King"</i>	5	3	48	SNTKE	Eur SWAsia, Aus	97/57 94/45,97	
210	Dryopteris	<i>affinis</i>	<i>diploid indef?</i>	4	3	48	SNTKE	Eur SWAsia	96/45	
211	Dryopteris	<i>affinis</i>	<i>disiuncta</i>	6	3	48	SNTKE	Eur SWAsia	96/45 92/9,26	
212	Dryopteris	<i>affinis</i>	<i>Persica</i>	30	4	48	SNTKE	Eur SWAsia	96/45 92/26	
213	Dryopteris	<i>affinis</i>	<i>Pinderi</i>	4	3	48	SNTK	Eur SWAsia	94/150	
214	Dryopteris	<i>affinis</i>	<i>Polydactyla</i>	12	3	48	SNTKE	Eur SWAsia	96/153	
215	Dryopteris	<i>affinis</i>	<i>Polydactyla Dadds</i>	12	3	48	SNTKE	Eur SWAsia	96/153 93/125	
216	Dryopteris	<i>affinis</i>	<i>pseudodisjuncta</i>	5	3	48	SNTKE	Eur SWAsia	92/9	
217	Dryopteris	<i>affinis</i>	<i>punctata</i>	4	3	48	SNTKE	Eur SWAsia	96/45 92/9,26	
218	Dryopteris	<i>affinis</i>	<i>robusta</i>	8	3	48	SNTKE	Eur SWAsia	93/100 92/9	
219	Dryopteris	<i>affinis</i>	<i>stillupensis</i>	4	3	48	SNTKE	Eur SWAsia		
220	Dryopteris	<i>affinis</i>	<i>The King</i>	6	3	48	SNTKE	Eur SWAsia	94/141	
221	Dryopteris	<i>amurensis</i>		15	3	24	1SWKE	Jp,Siberia	94/12	
222	Dryopteris	<i>ardechensis</i>		14	8		1SN	France	94/45,24 93/9	
223	Dryopteris	<i>arguta</i>		10	8	18	DTKEO	W. N.A.	97/36 94/97	
224	Dryopteris	<i>atratia</i>		30	6	18	INTK	Easia	96/185 95/2	
225	Dryopteris	<i>austriaca</i>	<i>Recurvata</i>	4	3	48	2OSNK	N. Hem	96/173	
226	Dryopteris	<i>Barnsii</i>		4	5	24		eUS	95/156	
227	Dryopteris	<i>bisseeana</i>		5	3	24	SZKEN	Jp	97/156	
228	Dryopteris	<i>blanfordii</i>		20	3	36	K	Him	96/45 95/12 93/9	
229	Dryopteris	<i>Borreri</i>	<i>pinden</i>	2	4	48		Eur SWAsia	94/9	
230	Dryopteris	<i>cambrensis</i>		7	6			Eng	97/188 92/24,26	
231	Dryopteris	<i>carthusiana</i>		10	2	30	TZWKE	Europe, N Am	97/173,83 96/45	
232	Dryopteris	<i>caucasica</i>		20	3	34		Caucasian mt	96/45 95/12	
233	Dryopteris	<i>celsa</i>		60	4	40	1ZTWOK	E US	97/197,181,156	
234	Dryopteris	<i>championii</i>		25	3	24	OKNT	Easia	96/173 94/10	
235	Dryopteris	<i>clintoniana</i>		5	3	40	WSKE	E NA	95/141,5 92/26	
236	Dryopteris	<i>clintoniana</i>	<i>hexaploid</i>	1	3	40	2WSKE	E NA	96/173	
237	Dryopteris	<i>contorta</i>	<i>notho complexa</i>	4	8			Eng	93/24	
238	Dryopteris	<i>corlevi</i>		19	8			N. Spain	96/185 94/104	
239	Dryopteris	<i>crassirhizoma</i>		10	3	36	TVKE	Ko,Ch,JP	96/173 94/45	
240	Dryopteris	<i>crassirhizoma</i>	<i>nakai</i>	4	5	36	TVK	Japan		
241	Dryopteris	<i>cristata</i>		60	3	36	ZWSKE	N. HEM	97/197,108	
242	Dryopteris	<i>cvcadina</i>		40	5	30	NUKE	Easia	97/7,197	
243	Dryopteris	<i>cystolepidota</i>		15	7	10	NSK	JapCh	94/38	
244	Dryopteris	<i>dickinsii</i>		15	7	24		Ch,JP	96/45 95/12 93/9	
245	Dryopteris	<i>dickinsii</i>	<i>Incisa</i>	2	8	24		Ch,JP	94/45	
246	Dryopteris	<i>dilatata</i>		25	4	40	WTOSK	NHem,GreenInd	97/173 95/12,2	
247	Dryopteris	<i>dilatata</i>	<i>Crispa Whiteside</i>	26	4	36	WTOSK	N Hem	95/135,36 94/25	
248	Dryopteris	<i>dilatata</i>	<i>Jimmy Dyce</i>	17	4	20	WTOSK	NHem.	97/197 95/146	
249	Dryopteris	<i>dilatata</i>	<i>Lepidota cristata</i>	15	4	18	WTOSK	N Hem	94/25 92/97	
250	Dryopteris	<i>dilatata</i>	<i>Recurvata</i>	6	4	36	WTOSK	N Hem	97/182	
251	Dryopteris	<i>erythrosora</i>		35	5	28	TNKO	Ch,JP,Kr	97/188,181,156	
252	Dryopteris	<i>erythrosora</i>	<i>Prolifica</i>	8	5	16	TNKO	Ch,JP,Kr	96/156,20	
253	Dryopteris	<i>erythrosora</i>	<i>white son form</i>	5	5	16	TNKO	Ch,JP,Kr	92/25	
254	Dryopteris	<i>expansa</i>		30	3	30	RTNE	NHem	96/20,34 95/9	
255	Dryopteris	<i>Expansa ?</i>	<i>small asian</i>	8	5		K	Asia	95/12	
256	Dryopteris	<i>filix-mas</i>		9	3	60	ZSNVE	N Hem	96/27 95/8,5	
257	Dryopteris	<i>filix-mas</i>	<i>Barnesii</i>	20	3	36	ZSNVE	N Hem	96/153,156	
258	Dryopteris	<i>filix-mas</i>	<i>Cristata</i>	60	3	48	ZSNVE	N Hem	93/120,131	
259	Dryopteris	<i>filix-mas</i>	<i>CristataAnqustatum</i>	4	3	8	2ZSNVE	N Hem	97/173	
260	Dryopteris	<i>filix-mas</i>	<i>CristataFilmy type</i>	20	3	60	ZSNV	N Hem	93	
261	Dryopteris	<i>filix-mas</i>	<i>CristataJackson</i>	3	3	48	3	N Hem	94/45	
262	Dryopteris	<i>filix-mas</i>	<i>CristataMartindale</i>	10	4	48	ZSNOKE	N Hem	96/153 95/141	
263	Dryopteris	<i>filix-mas</i>	<i>Grandiceps</i>	15	3	36	ZSNVE	N Hem	96/153 94/9,25	
264	Dryopteris	<i>filix-mas</i>	<i>Lineans</i>	17	4	36	ZSNOKE	N Hem	95/141 94/12	
265	Dryopteris	<i>filix-mas</i>	<i>LineansPolydactyla</i>	30	3	48	ZSNVE	N Hem	97/182 95/2,157	
266	Dryopteris	<i>filix-mas</i>								

HFF	GENUS	SPECIES	CVR	PK	Z	SZE	GRO	COLL.SITE	ORIG	DONOR
271	Dryopteris	filix-mas	Straberi	9	3	48	ZSNVE		N Hem	96/158 95/2
272	Dryopteris	filix-mas	sublinearis	11	4	48	ZSNOKE		N.Hem	94/141
273	Dryopteris	filix-mas	undulata robusta	25	3	60	ZSNVE		N Hem	95/108 94/97
274	Dryopteris	fructuosa		15	8	48	INSK		TarwIndia	93/43 92/26.43
275	Dryopteris	goeninqiana		8	3					96/21 94/9.97
276	Dryopteris	goldiana		15	3	48	TNVKE		N Am	97/173.83.108.1
277	Dryopteris	goldiana hyb. ?	x D. clintonia ?	7	3	48	SN		CT	94/39
278	Dryopteris	Goldiana x Clintoniana		15	3	48	2TNVKE		N Am	96/173
279	Dryopteris	Gymnosora		5	8	12			Japan	97/36
280	Dryopteris	hanchoensis		5	8				Japan	92/43
281	Dryopteris	hondoensis		10	3	24	EKTN		Jap	97/197 92/9
282	Dryopteris	indusiata ?		4	8	72			JpTaw	93/45
283	Dryopteris	intermedia		10	3	34	ZSNOEK		E N America	97/83 95/8
284	Dryopteris	Khasiana		6	8					95/2
285	Dryopteris	Kunthii		8	7		2K			97
286	Dryopteris	lacera		50	5	24	NTKE		Easialndia	97/7 96/157.173
287	Dryopteris	Lepidoda		5	5	20	ZNEK		INIndiaCh Eur	97/36 94/45
288	Dryopteris	ludoviciana		15	6	46	ASEWK		SE US	97/181 96/156
289	Dryopteris	ludoviciana	x Hybrid	5	6	46	ASEWK		SE US	97/156 95/9 94/2
290	Dryopteris	marginalis		50	2	25	ESNOK		NE N. Am	97/182.83.198.1
291	Dryopteris	monticola		5	7					96/45
292	Dryopteris	Nameqatae		1	7		3		Jap	94/45
293	Dryopteris	nigropaleacea		2	7				Him,Nindia	93/9
294	Dryopteris	oreades		20	4	20	NSVKE		Eur	95/12 94/45,104
295	Dryopteris	pallida		5	8				SEur	93/12
296	Dryopteris	pallida	pallida	25	8				SEur	95/135 92/26
297	Dryopteris	pallida	raddeana	8	8				Russia	94/45
298	Dryopteris	polylepis		9	6	24	EKNT		Jap	97/36 96/18
299	Dryopteris	pseudo-mas		6	4	24	NSOK		Eur	95/2 94/148
300	Dryopteris	pseudo-mas	Cristata	1	4	24	NSOK		Eur	93/38
301	Dryopteris	purpurella		4	5	36	NSKE		Japan	96/173 94/97
302	Dryopteris	pycnopterooides		10	6	24	EKENTO		SikkimJap	97/36,156 96/45
303	Dryopteris	Ramosa x Stewatrii		4	6				Pakistn	97/7 96/45
304	Dryopteris	Remota		25	4	36	1KNTE		Eur	97/181.156
305	Dryopteris	Sarcostora		5	7	18	2O		Ala?	97/156
306	Dryopteris	sichotensis		15	5	48	EKN		Easia	96/146
307	Dryopteris	sieboldii		8	6	24	ZSENKO		Easia	97/156
308	Dryopteris	sieboldii	Cyrena	5	6	20	ZSNKE		Easia	92/111
309	Dryopteris	sieboldii	Incisum	6	6	24	ZSNKO		Easia	96/10
310	Dryopteris	Sordipes		5	7		2			97/191
311	Dryopteris	sp.	Japan	4	8				Japan	93/7
312	Dryopteris	spinulosa		15	3	24	ZN		N.A.Jp	97/182.108
313	Dryopteris	spinulosa	plumosum	15	3	24	ZN		N.A.Jp	97/182
314	Dryopteris	stewartii		40	7	48	K			96/45,153 95/12
315	Dryopteris	sublacerata		20	7	20				95/36 94/24,25
316	Dryopteris	submontana		15	6	20	EANK		Eur. N. Af	96/45 94/104
317	Dryopteris	uniformis		20	5	30	ZNKOE		Easia	97/191 96/157
318	Dryopteris	vana	setosa	10	6	24	ZSNK		Sasia,Philipin	97/7 92/111
319	Dryopteris	vvillarii		20	5				Eur	96/45,185 95/12
320	Dryopteris	Villani	Submontana	4	5				Eur	95/61
321	Dryopteris	wallichiana		12	5	40	SNKB		Pantropic	97/173 96/158
322	Dryopteris	X complexa	complexa	4	4	36	ETNK		Europe	97/156 96/45
323	Dryopteris	X complexa	concorda	12	3	36	2ETVNK		Europe	97/7 94/45
324	Dryopteris	X complexa	critica	12	3	36	ETVNK		Europe	94/45
325	Dryopteris	x tavelli		43	5		S		Eur	95/12 92/9
326	Equisetum \$	palustre		7	2	18	1WU		cosmo	95/9
327	Equisetum \$	Ramosissimum		10	7	60	1WUK		Eur, SE US	95/9
328	Equisetum \$\$\$	Scirpoides		10	3	10	KWOEG		NHem	95/153
329	Equisetum \$\$\$	Sp.	Micro???	10	4	10	FWOEG		Mich???	95/153
330	Equisetum \$	telmateia		10	7	70	QGWUV		NHem	95/9,162
331	Grammitis \$\$\$	billardieri		10	7	5	WTYJ		Pantrop	95/53
332	Gymnocarpium	dryopteris		70	2	12	ERSGV		NHem	97/1 96/164
333	Gymnocarpium	dryopteris	Plumosum	10	2	12	RSGV		NHem	95/108,1,12
334	Gymnocarpium	lovamense		4	8	12	GENTK		EAsia	
335	Gymnocarpium	robertianum		40	2	16	1ASEGN		NHem	97/173 95/9
336	Gymnocarpium	x intermedium		3	7	12	2ERSGV		N.NAm	97/7
337	Hemionitis	Arifolia		2	8	6	KUA		S&SEasiaEindies	97/173 96/156
338	Hypolepis	Distans		5	8		2G		AusNZ	97/57
339	Hypolepis	muelleni		4	8	80	GWUK		AusTasm	93/53
340	Hypolepis	punctata		3	8	48	GUNEK		Asia,Aus,NZCh	
341	Hypolepis	Repens		9	7	80	GS		FlaC&SamWindie	96/156
342	Isoetes \$\$\$	Melanopoda		10	7	8	1UQFW		SCen Nam.	96/184
343	Lastreopsis	lacuminata		8	8	30	ENSJ	Aus	NZ,Aus,Tasm	97/106 95/53
344	Lunathyrium	japonicum		5	6	22	EANTK		S&SE&E asia	94/45 93/36
345	Lunathyrium	Unifurcatum		12	8	24	KO		Jap	95/88
346	Lycopodium	Annotinum		5	3	3	QLTZNO		NHem	95/9
347	Lycopodium \$\$\$	Obscurum		10	3	10	QZSWH		neNAm	95/153
348	Lycopodium \$\$\$	Selago		10	3	6	QZUWH		EIndiesNAmNZEur	95/153
349	Lycopodium	japonicum		20	7	72	CNUK		S&SEasia,Aus	96/180
350	Marsilea \$\$\$	Quadrifolia		10	4	4	FEGU		NHem	95/153
351	Matteuccia	orientalis		6	5	30	EZN		far east	97/192
352	Matteuccia \$	struthiopteris		60	2	60	ZWSEVK		N. Hem	96/175
353	Matteuccia \$	struthiopteris	asian form	3	3	60	ZWSEVK		Asia	
354	Matteuccia \$\$\$	struthiopteris	Pennsylvanica	10	2	60	ZWSEO		E. US	95/8 94/120
355	Nephrolepis	cordifolia		8	8	24	URJDE		Pantropic	95/9,151
356	Nephrolepis	cordifolia x Hyb	Paul Campbell	5	8	24	URJDE		Pantropic	95/157
357	Nephrolepis	Obliterata	Kimberly Queens	10	7	36			Aus	94/94
358	Notholaena	sinuata	sinuata	12	7	24	QUDA		SwUs,C&S am	92/104
359	Oleandra	species		10	8				China	95/11
360	Oleandra	species		10	8				KwangtungChina	95/63

HFT	GENUS	SPECIES	CVR	PK	Z	SZE	GRO	COLL.SITE	ORIG	DONOR	
361	Onoclea	\$\$\$	sensibilis		60	2	24	IWUGZE	NHemAsia	96/161.175 95/9	
362	Oreoptens		limbosperma		8	4	40	ZSNK	Eur N.A.	96/185 94/45	
363	Osmunda	\$\$\$	cinnamomea		10	3	60	WZVEK	NAmAsia	97/144.176	
364	Osmunda	\$\$\$	claytoniana		5	2	60	ZWSVKE	NAm	97/176	
365	Osmunda	\$\$\$	japonica		20	3	32	EYZWS	E&SAsia,Philipp.	97/176 95/110	
366	Osmunda	\$\$\$	regalis		20	3	90	ZWSOK	Cosmo	96/175	
367	Osmunda	\$\$\$	regalis	Brasiense	10	3	72	2ZWSVK	SAm	97/194	
368	Osmunda	\$\$\$	regalis	Crispa	10	3	72	ZWSVK	Cosmo	95/25 94/25	
369	Osmunda	\$\$\$	regalis	Cristata	10	3	72	ZWSVK	Cosmo	94/25 92/20.113	
370	Osmunda	\$\$\$	regalis	gracilis	1	4	48	ZWSVK	N. Hem	94/5	
371	Osmunda	\$\$\$	regalis	Japonica(Dimorphic)	1	4	48	ZWSVK	Easia	94/5	
372	Osmunda	\$\$\$	regalis	purpureascens	10	3	72	ZWSVK	NAm	96/176	
373	Osmunda	\$\$\$	Regalis	regalis	10	3	90	ZWSVK	Cosmo	94/25	
374	Osmunda	\$\$\$	regalis	regalis Purpurascens	10	3	90	ZWSVK	Cosmo	95/110 94/25	
375	Osmunda	\$\$\$	regalis	spectabilis	10	3	90	ZWSVK	Cosmo	95/25 93/9,150	
376	Osmunda	\$\$\$	regalis	Undulatum	1	4	48	ZWSVK	N. Hem	94/5	
377	Paesia		scaberula		8	8	30	GTEZVN	NZ	97/162	
378	Pecluma		alfredii		6	8				96/11	
379	Pellaea		andromedifolia		15	8	20	ZUDK	Calif	96/110	
380	Pellaea		atropurpurea		5	3	16	UADEK	C&N.A.	96/1.8,173	
381	Pellaea		calomelanos		8	8	10	UDAK	AfrEur	94/104	
382	Pellaea		Intramarginalis		10	8	30		MexCam	95/106,165	
383	Pellaea		nitidula		10	8	10		ChHawaii	94/104	
384	Pellaea		rotundifolia		13	7	6	DTZK	NZ	96/1.45,158	
385	Pentagramma		triangularis		10	6	10	UDRK	W.NAm	95/146.170	
386	Phanerophlebia		falcata		1	7			Easia		
387	Phanerophlebia		fortunei		3	7			Easia		
388	Phegopteris		connectilis		40	5	16	SNGVK	N.Hem	97/7,198	
389	Phegopteris		decursive-pinnata		6	4	24	2ENT	EurS&Easia	96/181,153	
390	Phyllitis		hemionitis		1	8	10		SEur,Cannys	92/45	
391	Phyllitis		hybrida		8	5			Eur	96/185	
392	Phyllitis		scolopendrium		10	4	24	ARNSKO	N.Hem	97/7	
393	Phyllitis		scolopendrium	Angustifolia	6	4	24	ARNSKO	N.Hem	95/2,150 94/9	
394	Phyllitis		scolopendrium	Digitatum	1	4	24	ARNSKO	N.Hem	95/2	
395	Phyllitis		scolopendrum	marginata	1	4	24	ARNSOK	N.Hem	94/9	
396	Phyllitis		scolopendrum	Municatum	1	4	24	ARNSKO	N.Hem	95/2	
397	Phyllitis		scolopendrum	Rhodesian crested	3	4	24	ARNSKO	N.Hem	95/157	
398	Phyllitis		scolopendrum	scolopendrum	8	4	24	ARNSKO	N.Hem	95/9 94/154	
399	Phyllitis		scolopendrum	Supramarginata	8	4	20	ARENKO	N.Hem	94/9	
400	Phymatodes		diversifolium		15	8	20	JGH	SAmAusNZ	97/99 95/9	
401	Plagiogyria		Japonica		2	8	8	I2	Jap	96/157	
402	Platycerium		bifurcatum		15	8	24	1JHTE	AusEIndiesIndia	95/9	
403	Polypodium		bifurcatum x willmckii		15	8	24	1JHTE	QueenAus	97/196	
404	Polypodium		amorphum		20	6	12	1R	Pacific NW	94/97	
405	Polypodium		Appalachianum	diploid	10	5		2K	Ohio	Ne US	97/83
406	Polypodium		Australe	Cristatum old form	4	6	18		Eur	92/41	
407	Polypodium		australe	Dentatum	5	6	18	JNT		92/41	
408	Polypodium		australe	Grandiceps Forster	1	6	18	3JNT		92/41	
409	Polypodium		australe	omnilcaerum oxford	2	6	18	JNT	England	92/41	
410	Polypodium		australe	Semilacerum Falcatum	6	6	18	JNT	Eur	92/41	
411	Polypodium		australe Semilacerum	falcatum O'Kelly	8	6	18	JNT	England	92/41	
412	Polypodium		australe Semilacerum	robustum	5	6	18	JNT	England	92/41	
413	Polypodium		californicum		1	8	24	3RNT	California	94/1	
414	Polypodium		cambicum	cambicum	6	6	10	TNK	sw Calif,Eur	95/9	
415	Polypodium		cambicum	serulatum	1	3	8	TN	sw Calif,Eur	95/9 94/154	
416	Polypodium		formosanum		10	8	12	HSJNT	TaiwCh Japan,	97/106,196 96/1	
417	Polypodium		glycyrrhiza		8	5	20	JSRHN	NW NAm	97/7 96/10,1	
418	Polypodium		interjectum		22	6	20	UWRAK	Eur	95/9 94/135,154	
419	Polypodium		interjectum	Glomeratum Mullins	2	6	20	UWRAK	Eur	92/41	
420	Polypodium		scouleri		10	7	14	TNJR	W.NAm	97/7 96/1	
421	Polypodium		vulgare		10	5	12	INTJK	N.Hem	95/9,166 93/38	
422	Polypodium		vulgare	Bifido-cristatum	3	4	12	INTJK	Cosmo	97/7 94/45	
423	Polypodium		vulgare	Cornubiense	2	5	14	INTJK	N.Hem	97/7	
424	Polypodium		vulgare	prionodes	1	4	14	INTJK	Cosmo	94/9	
425	Polystichopsis		imutica		3	8			Jap	94/45	
426	Polystichum		acrostichoides		40	3	28	SNOK	N.Am	97/83,108	
427	Polystichum		Acrostichoides	Forked pinnae	10	3	28	SNOK	N.Am	97/108	
428	Polystichum		aculeatum		30	4	30	EASRGN	Eur, N India	97/188,36	
429	Polystichum		aculeatum	Acutilobum	10	4	30	1EASRG	Eur, N India	95/150	
430	Polystichum		aculeatum	Nrw,split form	2	4	24	ASRNGE	Eur, N India		
431	Polystichum		andersonii		40	6	36	1WSRK	NW NAm	97/173 96/10	
432	Polystichum		australiense		10	8			Aus	95/106	
433	Polystichum		braunii		60	3	28	SNOKE	N. Hem	97/188,173,108	
434	Polystichum		californicum		12	7	30	RNT	California	97/170,4 94/1	
435	Polystichum		falcinellum		20	7	24		S.EurMadq.Madiera	96/45 93/12	
436	Polystichum		imbnicans		30	3	24	SNK	W NAm	94/97 93/7	
437	Polystichum		lemmoni		6	6	12	TNLK	W NAm	93/28,132	
438	Polystichum		lobatum		3	6	12		Ch	93/9 93/12	
439	Polystichum		lonchitis		30	3	18	ASWOK	N.Hem	96/45 95/8	
440	Polystichum		makinoi		20	5	24	EKNOK	CH, Jap	97/7 96/45,173	
441	Polystichum		mayebarae		3	6	18	TNK	ChJap	96/150 94/36	
442	Polystichum		mohnodes		30	5	14	IR	SAm,W NAm	93/12 92/12	
443	Polystichum		munitum		60	5	58	SNOK	W NAm	97/199,1 94/12	
444	Polystichum		munitum	Crispate	10	5	58	SNOK	W NAm		
445	Polystichum		Munitum	Twisted Pinna	4	5	36	SNKO	W NAm	94/25	
446	Polystichum		neolobatum		28	5	24	ENOKS	JpChNep Him	97/188,7	
447	Polystichum		polyblepharum		25	5	24	SZEK	JpChKor	97/7,156 96/158	
448	Polystichum		proliferum		8	5	36	INTEK	AusNZ	97/188 94/97	
449	Polystichum		retroso-paleaceum		10	5	36	SNEKO	JpChKor	97/36 94/45,38	
450	Polystichum		Richardii		2	6	24	IKN	NZ	95/9	

HFF	GENUS	SPECIES	CVR	PK	Z	SZE	GRO	COLL.SITE	ORIG	DONOR
451	Polystichum	riagens		1	3	24	KNT		JpChKor	93/9.26
452	Polystichum	setiferum		99	5	40	TNKE		Europe	97/7.197.181
453	Polystichum	Setiferum	Acutilobum	5	5	40	TNK		Europe	92/45
454	Polystichum	setiferum	Congestum	15	5	40	TNK		Europe	96/158.95/2
455	Polystichum	setiferum	Conspiculum	3	6	40	TN		Europe	94/45
456	Polystichum	setiferum	Conspicupinnulum	4	6	40	TN		Europe	94/45
457	Polystichum	setiferum	dahlem	8	5	40	TN		Eur	96/158
458	Polystichum	setiferum	divisilobum angustatum	3	6	40	TN		Europe	94/45
459	Polystichum	setiferum	divisilobum cristatum	2	6	40	TN		Europe	94/97
460	Polystichum	setiferum	Herrenhausen	6	5	40	TNK		Europe	95/2
461	Polystichum	setiferum	Mrs Hughes	3	6	40	TN		Europe	94/45
462	Polystichum	setiferum	Perserratum	2	5	40	TNK		Europe	92/101
463	Polystichum	setiferum	proliferum	5	5	40	TN		Eur	95/2.94/9
464	Polystichum	setiferum	proliferumWollastonii	6	6	40	INT		Eur	97/173
465	Polystichum	setiferum	Rotundatum	5	6	40	TN		Europe	95/141.94/45
466	Polystichum	setiferum	RotundCristatum	8	5	40	TNK		Europe	96/10.94/20
467	Polystichum	setigerum		20	2	48	1SNK		NW Nam	94/12.927.9.26
468	Polystichum	silvaticum		8	8	18			TasmaniaNZ	
469	Polystichum	squarrosum		10	7	18	NTK		EurIndiaHimalaya	94/36.93/97
470	Polystichum	Transkeiense		1	7		ZNKSGE		STropics	96/164
471	Polystichum	tripteron		25	5	24	INTE		Easia	96/45.173.95/12
472	Polystichum	tsus-simense		15	6	18	ZSNKE		Ch Jp Kor	97/7.197.156
473	Polystichum	woronowii		4	7				SWasia	
474	Polystichum	x bicknellii		4	6		12		Eur	96/45
475	Polystichum	x illyricum		40	5				SEur	96/45.94/97.93/9
476	Polystichum	x wirtae		4	6		12		Eur	96/45
477	Polystichum	Xiphophyllum		9	7	20			Chin. Twaiwan	96/21
478	Pteridium	aquilinum	aquilinum	20	3	120	GUDOKE	Eng	Europe	97/91
479	Pteris	cretica		30	8	24	THNEK		Comso	96/156.95/9
480	Pteris	cretica	Albo lineata	25	8	24	THNEK		Comso	97/173.96/158
481	Pteris	cretica	AlboLineataAlexandrae	10	8	24	THNEK		Comso	95/160
482	Pteris	cretica	cretica	1	8	24	THNEK		Comso	95/9
483	Pteris	cretica	Major	4	8	24	THNEK		E Hem	95/157
484	Pteris	cretica	Mayii	3	8	24	THNEK		E Hem	95/157
485	Pteris	cretica	Parkeri	4	8	24	THNEK		Comso	97/11
486	Pteris	cretica	Rivertoniana	10	8	24	THNEK		Comso	95/11.94/110
487	Pteris	cretica	Roweni	2	8	24	THNEK		E Hem	95/2
488	Pteris	cretica	wilsonii	1	8	24	THNEK		Comso	95/9
489	Pteris	cretica	Wimsettii	9	8	24	THNEK		Comso	95/9.2.157
490	Pteris	Incompleta		2	8				SWEurNafr	95/9.94/24
491	Pteris	macilenta		15	8	30	WSNEK		NZ	97/191.95/53.37
492	Pteris	multifida		3	6	20	NTREA		JapChPhilip	96/156.95/9
493	Pteris	semipinnata		2	8	30	KTN		E asia	95/110
494	Pteris	tremula		26	8	60	ETHNK		AusNZ FIJI	97/57
495	Pteris	vittata		30	8	36	UANEK		E Hem	95/160.9.94/110
496	Pyrosia	polydactyla		10	8	17	UNE		Taiwan	96/1.95/63
497	Rumohra	adiantiformis		10	8	48	SNJ		SHem	95/108.157
498	Salvinia \$\$\$	Natans		10	8	1	EFWHG		Eurasia	95/2
499	Selaginella \$\$\$	Uncinata		10	6	2	GOSZ		China	95/153
500	Thelypteris	Acuminatus		5	8				Jap	94/82
501	Thelypteris	decursive-pinnata		6	4	24	ENT		EurS&Easia	97/156
502	Thelypteris	Dentata		1	6	30	1AHTKN		Pantrop	95/156.94/156
503	Thelypteris	hexagonoptera		20	4	20	SZNEOK		E NAm	97/173.96/181
504	Thelypteris	aponica		2	8	14	NTK		Easia	
505	Thelypteris	kunthii		10	7	36	GNRET		SE US	97/181.95/27.9
506	Thelypteris	noveboracensis		28	4	18	ZTNEGO		N Am	95/156.108
507	Thelypteris	palustris		18	2	30	WZSKG		Eur.N Am	96/185
508	Thelypteris	palustris	palustris	15	4	18	WZGSK		Eur.N Am	92/24
509	Thelypteris	palustris	pubescens	6	4	30	WZGSK		Eur.N Am	92/9
510	Thelypteris	phaeopteris		25	2	24	SNZOK		Eur.N Am	97/108.96/129.8
511	Thelypteris	simulata		2	4	24	WZT		NE N Am	95/141.93/9
512	Thelypteris	torresiana		20	8	40	AWETK		Cosmo	97/181.95/156
513	Tmesipteris \$\$\$	Ovata		10	8	16	GQLK		Aus	95/53
514	Todea \$\$\$	barbara		10	8	48	QUNK		AusNZ.S.Af	95/53
515	Trichomanes \$\$\$	Sp	NZ	10	5	12	2KWHG		NZ	97/12
516	Unk.	Mutant 1		2	4	18	K		NY	97/157
517	Unk.	Mutant 2		2	4	18	K		NY	97/157
518	Unkown		Montrose Bot Gard	10	5	16	KNT		Montrose	96/18
519	Woodsia	fragilis		30	5	14	TK		Wasia	97/7.96/45
520	Woodsia	intermedia		8	5	6			EAsia	96/45.94/9
521	Woodsia	obtusa		10	3	14	RTNEA		N Am	97/52.96/174
522	Woodsia	polystichoides	Wooly type	8	4	10	2RUZEN		EAsia	97/7.96/45.173
523	Woodwardia	fimbriata		3	7	80	TWUEK		CalifMex	93/7.25.97.92/4
524	Woodwardia	radicans		10	7	60	NUEK		Eurasia	94/9.135.93/114
525	Woodwardia	Unigeminate		3	8	40	2EZKG		Easia	97/4
526	Woodwardia	virginica		20	3	24	WZUGO		E N Am	96/180.181.153



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